

one  
*water*

one  
*environment*

one  
*community*

**A Year of Progress**  
MWS 2021 Annual Report



# TABLE OF CONTENTS

- 2 *Letter from the Director*
- 4 *About Us*
- 6 *Organizational Chart*
- 7 *Watershed Protection*
- 8 *Virtual Outreach*
- 10 *WIFIA Loan Invitation*
- 11 *Metro's Legionella Program*
- 12 *Mansker Creek*
- 14 *Infrastructure Updates*
- 17 *Net Zero Energy Building*
- 19 *By the Numbers*
- 20 *Financials*

# Dear Metro Water Friends and Colleagues,

As we have emerged from the hardships of 2020 and 2021, I am happy to share that Metro Water Services has improved, become more efficient, and has grown to provide more than safe, clean, and reliable water services. In July 2021, MWS was given the responsibility to also provide waste and recycling services to the residents of Nashville. This has expanded our reach and impact on our neighbors, community, and city. That is why you will see us discuss: One **water**, One **environment**, One **community**.

As we expand our services, we will continue to meet the demands of our mission to provide safe, clean, and reliable water and waste services through the use of technology, environmental programs, and providing information to the community.

MWS has made great strides in our aggressive capital program with several large projects currently underway. Through innovative stormwater practices and an updated stormwater management manual, we continue to reduce pollution in our waterways. Our commitment to creating a more sustainable footprint remains successful with the use of renewable energy and green infrastructure at multiple facilities and protection and improvement of the urban tree canopy. You can learn about all of these programs and more by liking and following [@NashvilleMWS](#) on Facebook and Twitter.

2021 has been **a year of progress** and we are excited to share this with you in this year's Annual Report.



**Scott A. Potter, Director**





# A Glimpse at Our Native Plantings

The native grass and wildflower meadow next to the south parking lot of the MWS Administration Building reduces mowing and stormwater runoff while providing spring summer and fall color in a natural habitat.



# ABOUT US

Nashville has had a public water system supplied by the Cumberland River since 1833. The water treatment and distribution facilities have grown gradually and have been expanded and upgraded to meet the needs of the community, as well as to comply with increasingly stringent water quality and public safety laws and regulations.

MWS is a Metro enterprise operation, meaning that it is funded through the revenues it generates from services provided to customers, and that the agency does not receive general tax funds to support its water, wastewater or stormwater capital or operating and maintenance budget.

Metro Water Services provides public water (treatment and distribution) and wastewater (collection and treatment) services to customers located in Nashville/Davidson County and portions of five surrounding counties: Robertson, Rutherford, Sumner, Williamson, and Wilson. We provide stormwater and waste services for customers located in Nashville/Davidson County (**540** square miles). The public drinking water system is also a vital part of the fire protection in the community.

# Water

More than **3,000** miles of pressurized water mains, **37** reservoirs, **55** water pumping stations, and over **21,000** fire hydrants provide water supply and protection to approximately **216,000** customers (accounts). Finished drinking water is provided by **two** water treatment plants, R.L. Lawrence (Omohundro) and K.R. Harrington, each with rated capacities of **90 million** gallons per day (MGD).

# Stormwater

Stormwater services are provided for Nashville/Davidson County, covering **540** square miles. Nashville has the fourth largest municipal separate sewer system (MS4) in the nation with more than **48,000** inlets, **7,500** outfalls, and **866** miles of culverts.

# Wastewater

Wastewater is collected by means of over **3,100** miles of sewer lines and **117** sewer pumping stations. Wastewater treatment is provided for approximately **220,000** customers (accounts) by **three** wastewater treatment plants, Central, Dry Creek and Whites Creek. On average **177 million** gallons of sewage is treated per day.

# Waste Services

July 2021, waste related functions, trash and recycling, were transferred from Metro Public Works to Metro Water Services. This transfer included **121** staff positions and **127** pieces of waste related equipment. This transition did not affect Waste Services facilities such as convenience centers and drop-off sites or service to the more than **150,000** curbside customers. Waste Services will continue to be separately funded through USD property taxes. MWS and Waste Services funds are maintained separately.

For more information, visit our website at [water.nashville.gov](http://water.nashville.gov) and follow us on Facebook, Twitter and Instagram at [@NashvilleMWS](https://www.instagram.com/NashvilleMWS).

**Director**

**Legislation**

**Communications**

**Deputy Director**

**Customer Services**

**Development Services**

**Engineering**

**Human Resources**

**Finance**

**Waste Services**

**System Services**

**Stormwater**

**Water Operations**

**Wastewater Operations**

# WATERSHED PROTECTION

**4,239**

*SW Control Measure  
Inspections*

**18,373**

*Trees Planted*

**308**

*Grading Permits  
Issued*

The National Pollutant Discharge Elimination System (NPDES) Section is a division of stormwater that oversees all Municipal Separate Storm Sewer System (MS4) permit compliance activities. The NPDES section is responsible for protecting streams and ensuring water quality by performing specific MS4 permit requirements such as public education activities, illicit discharge investigations, runoff /discharge sampling, construction site inspections, field screening inspections, industrial inspections, etc. In addition, the NPDES section is responsible for coordinating with various other Metro Departments to ensure permit compliance measures are being followed on a Metro - wide basis.

Each year, an Annual Report which details last fiscal year's various permit compliance activities performed by Metro and our stakeholders is submitted to TN Dept of Environment and Conservation (TDEC) as mandated by the Federal Clean Water Act and our TDEC MS4 NPDES permit.

The NPDES Annual Report for the period of July-2020 through June-2021 can be found at [www.nashville.gov/departments/water/community-education/reports/npdes](http://www.nashville.gov/departments/water/community-education/reports/npdes).

# VIRTUAL OUTREACH

Clean water is essential to hygiene and health; communication and education are essential to public awareness of that fact.

During a typical year, MWS would give almost **150** school presentations, **100** facility tours, and attend various community meetings and events. However, this past year was anything but typical. With COVID continuing to limit the world's ability to communicate as we normally would, MWS, like so many others, had to adapt and think outside the box.

The world continued on, as did important water, sewer and stormwater projects and our commitment to sharing information with our community. While unable to host in-person meetings, we maintained communications and collaboration with our customers and community by going virtual.

Meetings, both internal and external, were held using Zoom, WebEx, or Teams. This approach worked well and proved to be an efficient way of meeting.

We also utilized various platforms for in depth project outreach. We have a virtual open house for our Central Wastewater Treatment Plant Optimization Project (<https://bit.ly/CWTPOptimization>) and a virtual site for the Historic 8th Ave. Reservoir Project ([historic8thavenuereservoir.com](http://historic8thavenuereservoir.com)).

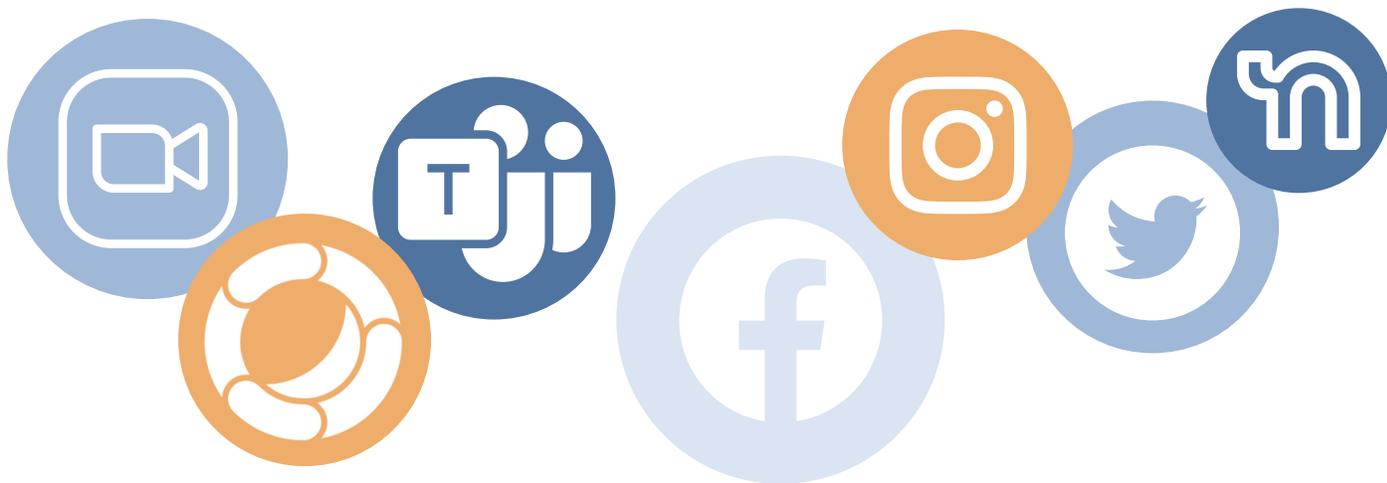
“  
**150** school presentations  
**100** facility tours  
Community meetings  
& events  
”



Tours and presentations are another essential element of our outreach. However, it is essential that we protect the MWS operators providing vital services such as water to the community from the spread of germs. Therefore, to protect our employees and still keep the community engaged, we created virtual tours of our facilities. “Live” tours were provided virtually using an iPhone and handheld stabilizer and tours were recorded and posted on the MWS website (<https://www.nashville.gov/water/community-education/teachers>).

Social media remained an important part of our communication plan and was relied upon heavily during this time. We expanded our social media to include Facebook live events. We began hosting quarterly town halls with our Director, Scott Potter. These were so well received, they were increased to monthly events.

While nothing can compare to the potential for engagement in an in-person environment, the ability to expand our communications methods has been beneficial and has allowed us to maintain our status as the community's trusted resource for information regarding water, wastewater, stormwater and waste services.



# WIFIA LOAN INVITATION

This past January, the EPA announced that **55** new projects across **20** states were being invited to apply for Water Infrastructure Finance and Innovation Act (WIFIA) loans. WIFIA loans are in place with the goal of reinforcing the long-term water infrastructure through low-cost assistance for both regional and nationally significant projects. Among these projects are Metro Water Services' Process Advancements Projects at both of MWS' water treatment plants, Omohundro and K.R. Harrington. The total cost of these projects is approximately **\$640 million** over the project life.

The project plans include, among other improvements, the installation of Granular Activated Carbon (GAC) Post Filter Adsorbers, stemming from our Pilot Plant project, which began in 2018. The goal of the pilot plant was to explore new water treatment technologies before implementing them on a larger scale. Learn more about the Pilot Project in the 2020 Annual Report.

Receiving this loan will allow Metro Water Services to pursue these improvements

and subsequently achieve the following four key water quality benefits:

1. Lower finished water Total Organic Carbon (TOC) concentrations
2. Lower formation of Disinfection By-Products (DBPs) in the distribution system
3. Improved taste and odor control (2-methylisoborneol (MIB) and geosmin removal)
4. Ability to address a wide range of Contaminants of Emerging Concern (CECs)

This project also includes plans to add a new raw water pumping station at Omohundro to mitigate the risk of plant failure in the case of another major flooding event, as well as a new clearwell to address the current inadequate storage for finished water on site.

The invitation to apply for this loan means big things for our water treatment plants and will allow us to continue to strive for better things both for our customers and the environment.

# LEGIONELLA PROGRAM

Safe water is Metro Water Services' top priority. Therefore, Metro Water Services funds a position dedicated to Legionella at the Metro Health Department. This position oversees a program designed to reduce the risk of Legionella growth and spread in public buildings.

Legionella is a bacterium that can become a health concern when it grows and spreads in the building water systems such as premise plumbing, hot tubs, water heaters, cooling towers, fountains, and other building water systems. When inhaled in high amounts, Legionella can cause a serious type of pneumonia called Legionnaire's disease or a less serious illness, Pontiac fever.

Public buildings of concern include hotels, hospitals, care facilities, recreational facilities, and more. Reducing the risk of Legionella growth and spread is key to preventing illness. Building owners and managers can do this by implementing a water management program that properly maintains building water systems and implements controls to reduce the risk for

Legionella growing and spreading within their water system and devices.

The Metro Legionella Program provides guidance to building owners and managers. As part of the Legionella program, the health department has located and documented all Davidson County cooling tower locations in a registry that will assist in tracking possible outbreak clusters. Additionally, public swimming pools are being actively monitored for disinfection to increase confidence and safety for swimmers and plans for new hotels and pools are reviewed to ensure appropriate information is obtained and that they are included in the registry. Beginning in 2021, the Health Department began forming an advisory board made of members that build, design, disinfect, and maintain cooling towers. This board, when formed, will provide guidance and outreach, such as newsletters, concerning Legionella.

Partnerships with the community and the Metro Health Department combines the resources and expertise necessary to research, test, and monitor Legionella in Davidson County. Partnerships such as this are vital to the future growth, economic health, and safety of our community.

*To learn more about combating Legionella and Legionnaire's Disease in Nashville, please visit: <https://www.nashville.gov/departments/health/environmental-health/legionella>.*

# MANSKER CREEK

In April of 2021, Metro Water Services' Stormwater NPDES Program completed a stream bank stabilization project along **320** feet of Mansker Creek.

Mansker Creek is a stream that has been identified by the Tennessee Department of Environment and Conservation (TDEC) for being impacted by sedimentation. Eroding banks are one of the largest sources of sediment loss to streams. The erosion in this section of Mansker Creek was so severe that it was threatening a sanitary sewer main and greenway trail running parallel to the creek. Stabilizing this section of the creek will drastically reduce the sediment loads to the creek during storm events.



Metro Water Services funded this project with our Watershed Improvement Fund Program. We pursued additional funds through grant funding reimbursement from the TN Department of Agriculture 319 program and the National Resources Conservation Services Emergency Watershed program. In the end, we were able to receive approximately half of the construction costs through the State and Federal grant programs.

# Meet the Chew Crew

MWS uses sheep to control vegetation on the steep and uneven terrain of the Metro Center levee. In addition to the cost savings, the use of grazing animals is more environmentally friendly and socially engaging.



# INFRASTRUCTURE

Metro Water Services and Clean Water Nashville continue to make infrastructure improvements that increase our ability to provide safe, clean, and reliable water services to our community.

It is extraordinary that more than **65%** of our 3,000 miles of water pipes and **58%** of our 3,100 miles of sewer pipes are over 40 years old. The Water Infrastructure Rehabilitation (WIR) and Sewer Infrastructure Rehabilitation (SIR) subsidy, which began in 2019, provides specified funding for water and sewer main rehabilitation and replacement as it is essential to invest in infrastructure to provide the level of service our customers expect.

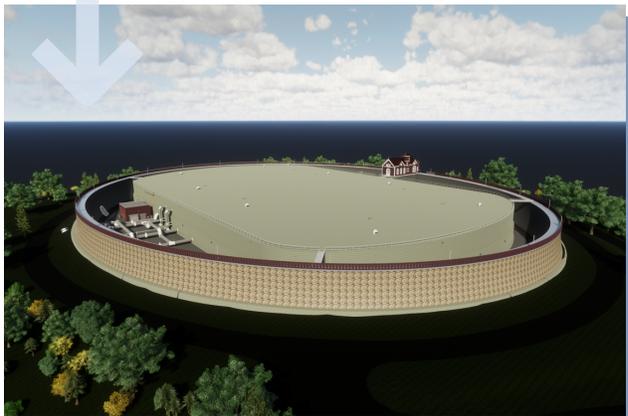
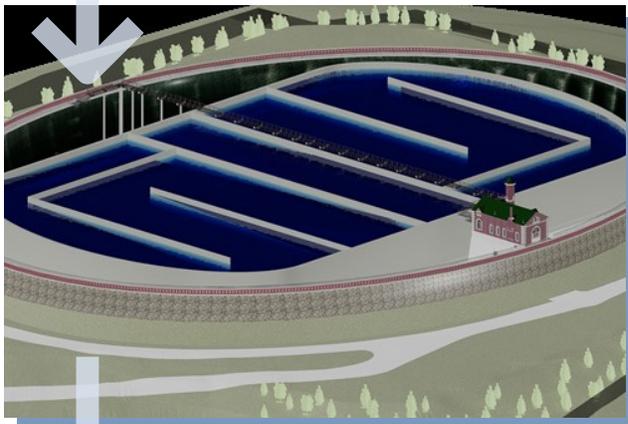
In FY21, we initiated **seven** (7) new water projects and **seven** (7) new sewer projects. **Five** (5) of the sewer projects were part of the Clean Water Nashville initiative established in 2011.

The largest Clean Water Nashville project to date is the **Central Wastewater Treatment Plant (CWWTP) optimization project** which began in 2020. This project will add an additional 100 million gallons of capacity to meet current and future water reclamation needs. The investments will do more than increase capacity. The infrastructure improvements will make the CWWTP safer, more reliable, and energy efficient.

Community improvement provisions will provide for additional odor control and the creation of a park-like landscape improvements along 3rd Avenue. Finally, these improvements will be reflected in a name change that better illustrates the work accomplished at the facility. Central Wastewater Treatment Plant will become the Central Water Reclamation Facility. Learn more about the CWWTP Optimization Project here: <https://gather.cdmsmith.com/v/5VjYInLzob>.



The **Davidson Branch Pump Station and Equalization Facility project**, which began construction in September 2020, is another large-scale Clean Water Nashville project that will have major positive environmental and system impacts. The project scope includes replacing a 1960s era pumping station, increasing pumping capacity, and providing a storage tank to reduce peak flows during wet-weather conditions. Reducing the flow will assist in preventing overflows and allow better flow for water reclamation. Learn more about the Davidson Branch Pump Station and Equalization Facility project here: <https://www.cleanwaternashville.org/davidson-branch-pump-station-and-equalization-facility>.



The **8th Ave. Reservoir Project** is a water project that will renew the historic reservoir and enhance its operation. The 8th Avenue Reservoir is not only our oldest reservoir, but also our largest reservoir making it an important part of our history and water system. The reservoir has a capacity of 51 million gallons and was originally constructed in 1889. This project, funded with a State Revolving Fund loan, is a celebration of Nashville's history and the future of our community. Currently, the reservoir is operated at half capacity, 25.5 million gallons, but with the innovative tank-in-tank design, the reservoir will provide 35 million gallons of storage once complete. We are currently in the process of building a reservoir within the reservoir. The historic walls will remain in place, preserving Nashville's history, but will no longer have to support the weight of the water. The new reservoir will also maintain water quality with a series of baffles that move water evenly through the reservoir. Additionally, the improvements will restore the beautiful gatehouse sitting atop the reservoir. Learn more about the Historic 8th Ave. Reservoir project here:

<https://historic8thavenuereservoir.com/>.

*Water quality is our highest priority and governs every decision we make. Funding from the 2019 rate increase has enabled these important projects and treatment plant upgrades. By working to increase our capacity and efficiency, MWS continues to create a sustainable water system that will be available to meet the needs for a community that continues to expand.*

# NET ZERO ENERGY BUILDING

This year MWS completed the construction of Metro's first Net-Zero Energy building as part of MWS' commitment to creating a more sustainable footprint. The new **12,500** square foot Central Administration Building holds **514** solar panels capable of generating **410** watts (W) of solar power each (DC). This is more energy than the building needs to operate on a daily basis. The excess power will not go to waste, but it will be sent to the Central Water Reclamation Facility – furthering our mission to efficiently provide safe, clean, and reliable water services to our community.

The Central Administration Building was built with LEED selected materials and has several energy and resource efficient features.

**514** solar panels  
capable of generating  
**410** watts (W) of solar  
power each

One such feature is a Variable Refrigerant Flow HVAC system designed to run less frequently and at a lower capacity, while providing the same amount of comfort as traditional systems. Part of the innovative design lets the system capture heat created during the cooling process and reuse it in other areas that may need heating. Our Net-Zero Energy building will realize other energy and environmental goals by using smart lighting systems such as daylighting, LED, and motion sensors. It also incorporates low flow faucets, building automation systems, proper building insulation and permeable pavers/LID features in the parking lot.

This building is only part of our commitment to renewable energy. MWS is helping to meet Metro's 100% renewable standard by installing additional on-site, cost effective solar. Currently, 4 megawatts (MW) of solar is under construction, and an additional 6 MW is being planned. These renewable, energy efficient designs lower our operating costs and reduce emissions to enhance the quality of life in Nashville.

# Metro's First



# Net Zero Energy Building



## Stormwater

**1,580** SW Requests  
**2,109** Inspections  
**1,853** Completed Work Orders

## Customer Service

**2,612,333** Bills Generated  
**215,914** Water Customers  
**219,937** Sewer Customers  
**891,847** Calls Taken

## Development Services

**130** Water Plans Approved  
**184** Sewer Plans Approved  
**1,028** Water Permits  
**1,485** Sewer Permits

## Fleet

**500** Vehicles / Equipment

# By the Numbers

The data presented here reflects the initiatives and hard work delivered by Metro Water Services to maintain a high quality water program.

# FINANCIALS

This summary is intended to serve as an introduction to Metro Water Services basic financial statements. The basic financial statements consist of the Statements of Net Position, the Statements of Revenue, Expenses, and Changes in Net Position and the Statements of Cash Flows.

Metro Water Services collects its primary revenues from charges for water and sewerage services provided to customers. Activities are funded entirely from revenues generated from its operations, with no tax revenues from the Government. All revenues are required to be used for the benefit of the ratepayers.

On June 30, 2021, the Utility served approximately 216,000 water accounts and 220,000 sewer accounts. On January 1, 2020, Water and Sewer rates were increased for the first time since 2011. The increase included a water rate restructure that consolidated base charges across customer classes and introduced an increasing block tiered rate structure for residential water use. The rate restructure and increase, which included multiyear percentage adjustments, was adopted through ordinance BL-045 by the Metropolitan Nashville Davidson County Council on December 10, 2019.

On June 30, 2021, assets and deferred outflows of the Department were \$2.8 billion and exceeded liabilities by \$1.4 billion (total net position). In 2021, the rate increase, and continued economic development positively impacted operating revenues of \$309.9 million, an increase of \$44 million as compared to 2020. For 2021, operating expenses were \$196.5 million, a decrease of \$23 million from 2020 mainly caused by \$9.9 million less in personnel services. The decrease in personnel services was driven by an adjustment of pension liability pursuant to GASB 68 reporting requirements implemented in 2017. The reduction in contractual services resulted from security and other services that could not address needs due to impacts from the worldwide pandemic. Investment income decreased from \$1.3 million in 2020 to \$600 thousand in 2021, following the continued volatility of the investment market due to COVID-19. Capital grants and contributions increased by \$20.3 million to \$46.9 million in 2021, suggesting that development through infrastructure deeding process has remained steady and grown.

**Statements of Net Position**  
Condensed Financial Information as of

June 30, 2021

	<u>2021</u>	<u>2020</u>
Total current assets	\$ 217,010,951	\$ 207,422,860
Total capital and other non current assets	2,582,550,652	2,328,285,091
Total assets	<u>2,799,561,603</u>	<u>2,535,707,951</u>
Deferred charge on refunding Pensions	1,062,031	2,509,379
Total deferred outflows of resources	<u>6,932,552</u>	<u>7,037,553</u>
	7,994,583	11,120,111
Total current liabilities	317,212,187	147,421,162
Total noncurrent liabilities	999,332,321	1,057,093,444
Total Liabilities	<u>1,316,544,508</u>	<u>1,204,514,606</u>
Pensions	45,473,875	6,467,308
Total deferred inflows of resources	<u>45,473,875</u>	<u>6,467,308</u>
Total net Position	<u>\$ 1,445,537,803</u>	<u>\$ 1,334,272,969</u>

**Statement of Revenue, Expense, and Changes in Net Position**

June 30, 2021

	<u>2021</u>	<u>2020</u>
Operating revenues	\$ 309,956,808	\$ 265,887,373
Depreciation (expense)	(87,628,485)	(86,868,784)
Other operating (expenses)	<u>(108,824,451)</u>	<u>(132,611,031)</u>
Operating income	113,503,872	46,407,558
Investment income	596,068	1,279,050
Interest expense	(37,082,139)	(32,364,872)
Other	883,273	(696,608)
Capital grants and contributions	46,908,906	26,567,580
Transfers to other funds of the Metropolitan Government, net	<u>(13,557,920)</u>	<u>(14,015,941)</u>
Change in net Position	111,264,834	27,176,767
Net Position, beginning of year	<u>1,334,272,969</u>	<u>1,307,096,202</u>
Net Position, end of year	<u>\$ 1,445,537,803</u>	<u>\$ 1,334,272,969</u>



In 2009, the Metropolitan Government established a Stormwater Division of the Department as a stand-alone enterprise fund with its own set of service fees, which are now an itemized part of the water bill. Stormwater operations is funded solely through stormwater fees and any associated bonds supported by those fees. This financial statement does not include stormwater.

On July 1, 2021 the department took on management of the Metropolitan Government of Nashville Davidson County Waste Services which includes resident recycling and waste collection in the Urban Services District, commercial trash collection in the downtown corridors, county-wide refuse collection convenience centers and drop off points, and oversight of the counties closed landfills. Waste Services activities are funded solely from Solid Waste fees and revenues generated from the General Fund.

Please note that information is a summary and does not contain all of the information available in the full Comprehensive Financial Annual Report (CAFR) at <https://www.nashville.gov/Finance/Financial-Operations/Comprehensive-Financial-Reports.aspx>.

## **Water, Sewer, & Stormwater**

615.862.4600

[mws.dispatchers@nashville.gov](mailto:mws.dispatchers@nashville.gov)

1700 3rd Ave N | 8a-5p T & Th

## **Waste Services**

615.862.5000 | 311

[Hub.Nashville.gov](http://Hub.Nashville.gov)

## **Public Records Requests**

[www.nashville.gov/departments/  
metro-clerk/public-records-request](http://www.nashville.gov/departments/metro-clerk/public-records-request)